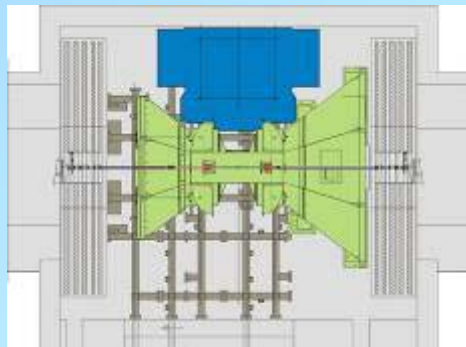
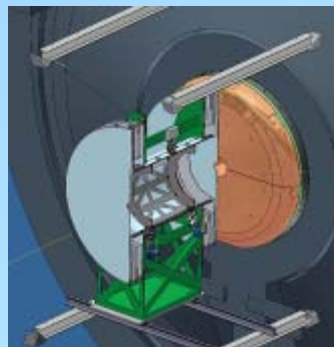
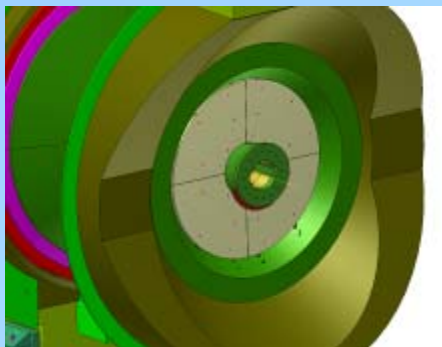


# PHENIX WEEKLY PLANNING

TECHNICAL SUPPORT 2010



(Income Taxes Due Today)

4/15/2010

Don Lynch

# Ongoing Tasks for Run 10

## Task

Start Date

End Date

Install rack components in RPC3 N racks

in progress

6/1/2010

Attach cables to RPC3 N racks and to Detector  $\frac{1}{2}$  octants

in progress

6/1/2010

Commissioning Tests (HV, Mixed gas and Freon only)

5/5/2010

6/11/2010

Send mass flowmeters out for recalibration (DC/PC, MuID, TOF.W)

In Progress

6/30/2010

AH Crane 110 switch for lockout

In Progress

6/30/09

## PHENIX Startup Checklist Status

Item

Responsibility

Status

Item 12: Dumb Waiter

Lynch

Done??

TECHNICAL SUPPORT 2010

4/15/2010

## This Week:

- No scheduled maint.
- Run 10 tech support
- Future upgrade support as necessary
- Continue VTX support structure design
- Continue VTX thermal design calculations
- Complete RPC absorber design
- 2010 summer shutdown prep continues:
  - VTX & BP assembly/installation parts & fixtures procurement & fabrication
  - RPC3 S assembly/installation fixtures parts & fixtures procurement & fabrication
- Evaluate AH ramp ground water problems with PE and CAD
- Stony Brook potential students tour tomorrow maybe as many as 100 students visiting by bus.

## Next Week

VTX Support frame design continues

Resolve BP legal issues

Maintenance access Wed 4/21/2010:

**Prepare for absorber installation review**

Complete VTX Cooling analyses: Done except for big wheels

Prep for 2010 shutdown

Begin preparing for VTX installation review (including BP)

Future upgrades support

## 2010 Tasks

Start Date End Date

Run 10

In progress 6/21

VTX Installation Plan (Final)

In progress 5/31

RPC3S Installation Plan (Final)

In progress 5/31

Design support structure, alignment scheme for VTX

In progress 3/31

Specify and procure electronics racks and support equipment for VTX

In progress 5/31

Fabricate beam pipe supports

In progress 5/1

Beampipe NEG coating (CERN)

4/15? 5/31?

Fabricate/procure parts for RPC3 S installation

In progress 5/1

Fabricate/procure parts for VTX installation

In progress 6/1

End of run 10

6/23 6/23

End of Run Party

~6/11 ~6/11

Prep IR for shutdown

6/1 7/1

Complete unfinished business for MuTrgr FEE &amp; RPC3 North

6/23 8/1

Install Beam pipe

7/1 9/1

Install VTX

8/1 11/1

Install RPC3 South

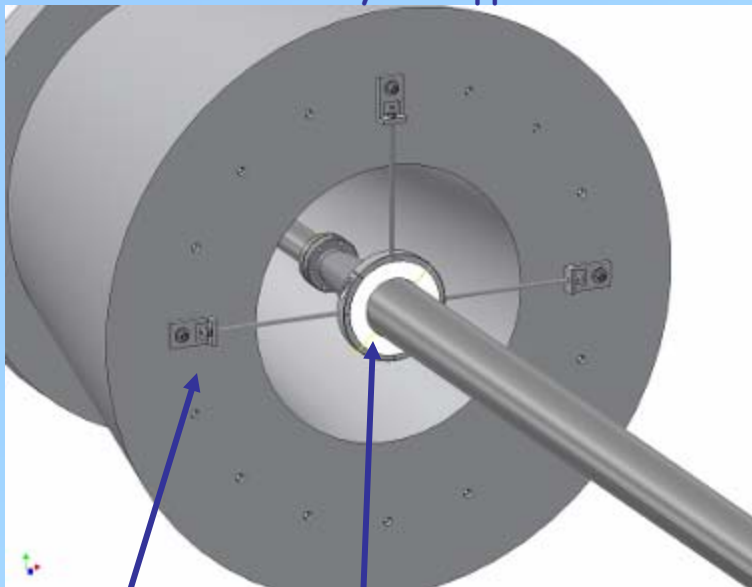
6/23 11/1

2010 Shutdown Other Tasks

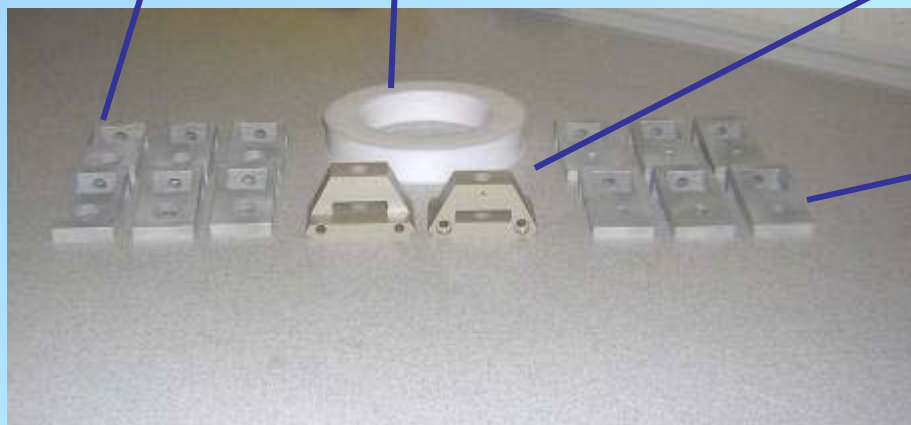
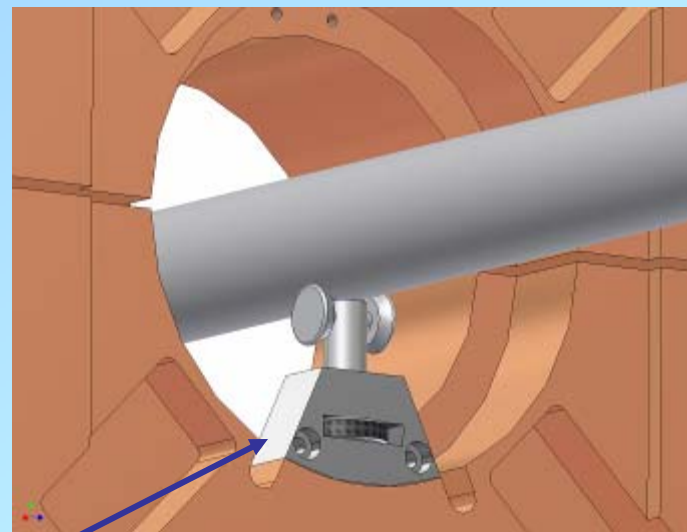
6/23 12/1

TECHNICAL SUPPORT 2010

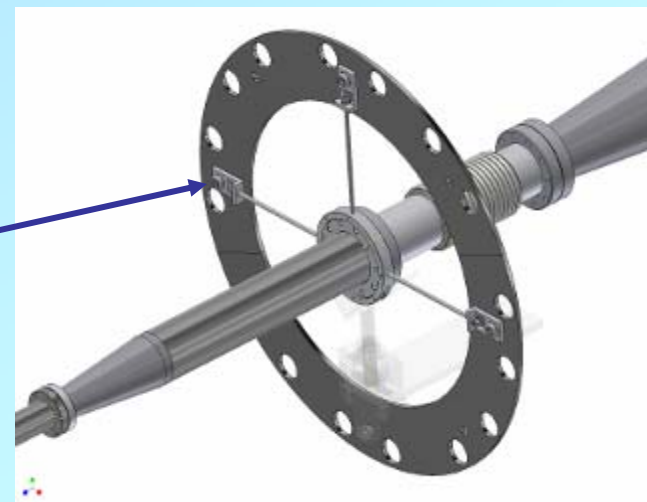
South BBC Cavity BP support



CM central BP supports (2 req'd)



BP support components from CS



North MPC Cavity BP support

4/15/2010

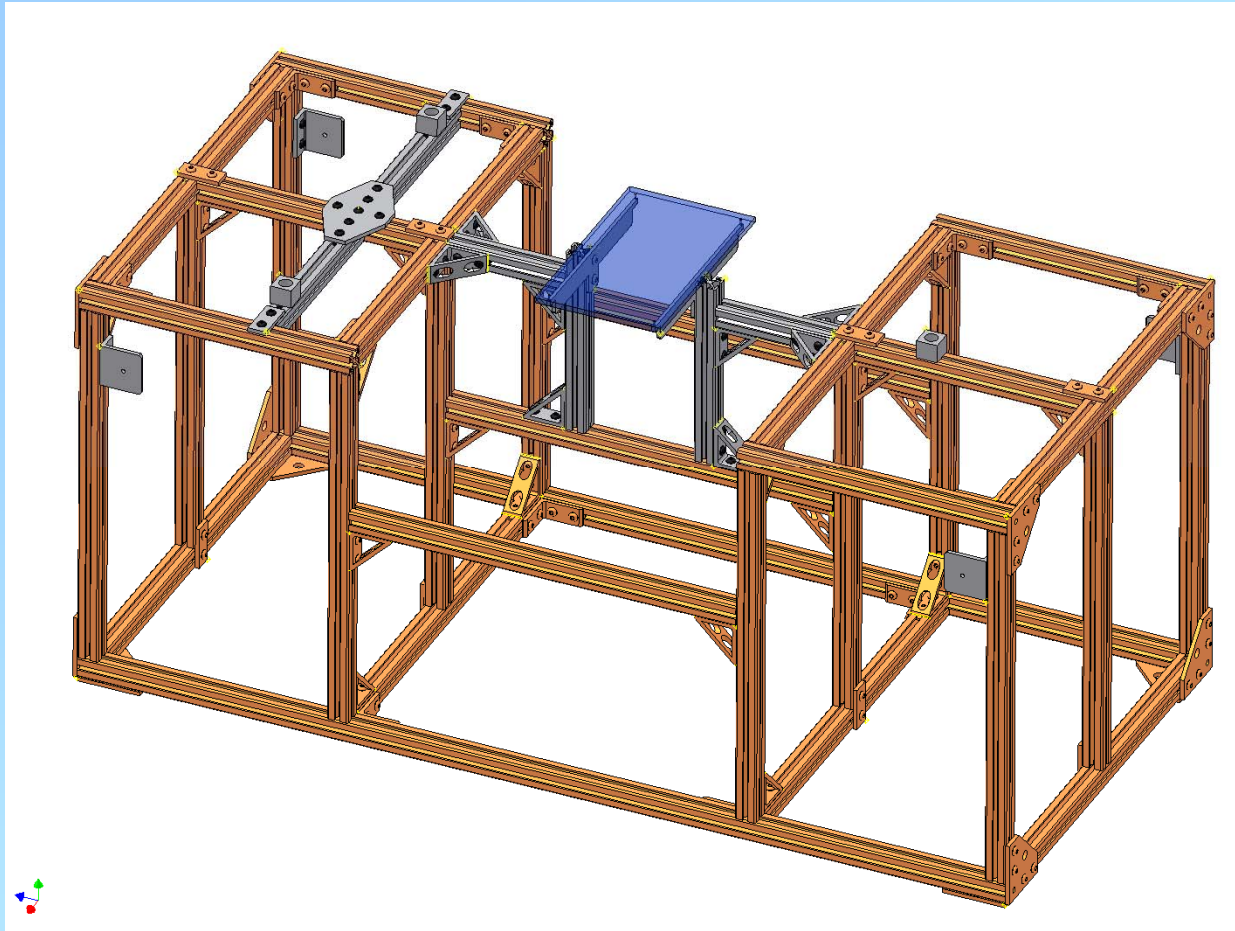
TECHNICAL SUPPORT NO-0



TECHNICAL SUPPORT NO-0

4/15/2010

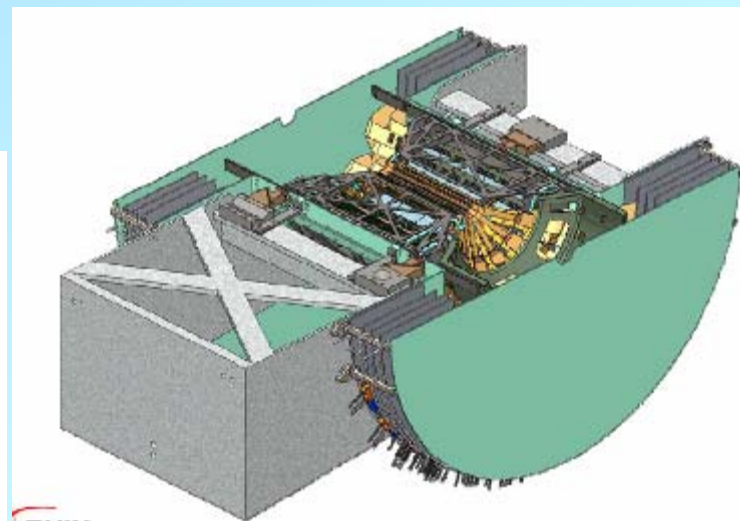
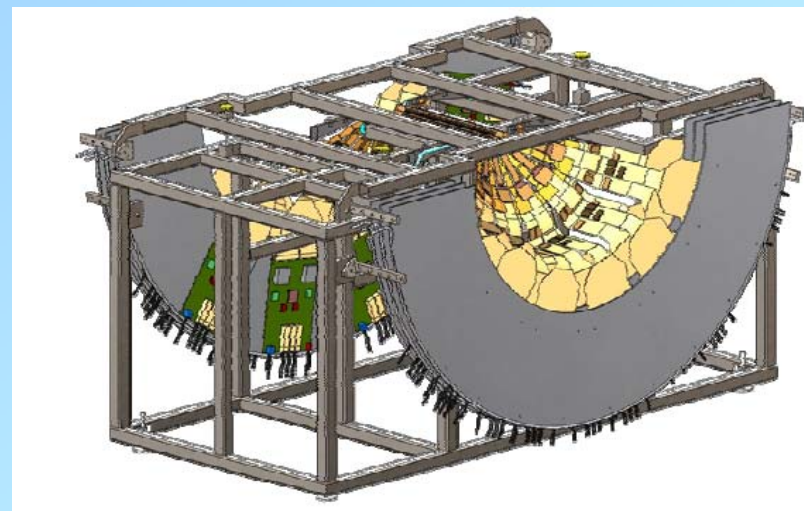
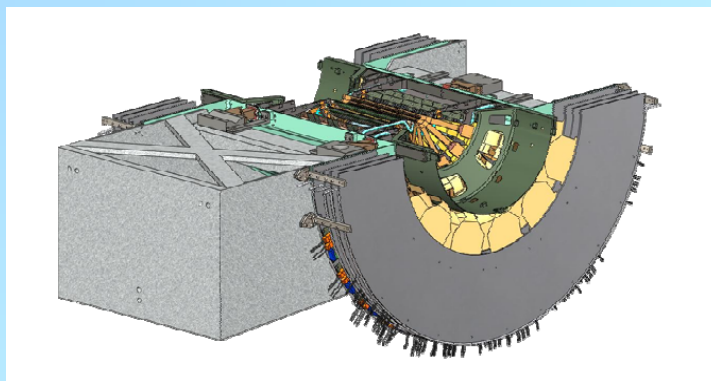
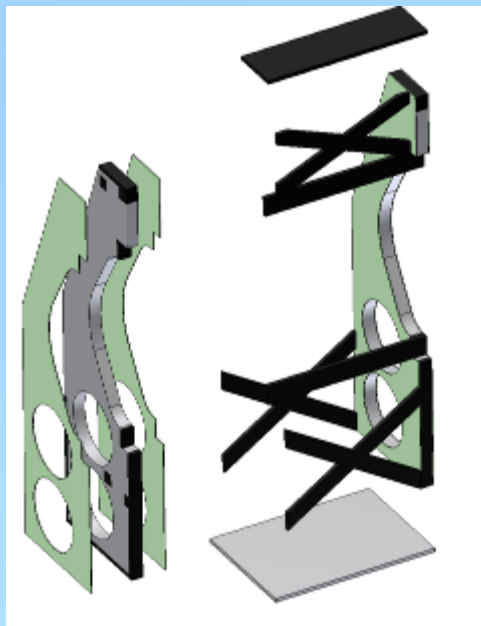
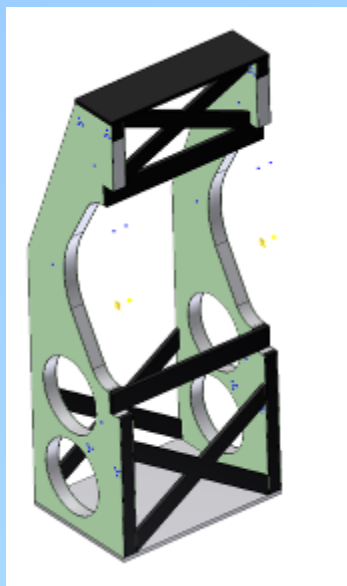
## VTX Assembly Fixture (3 others are similar)

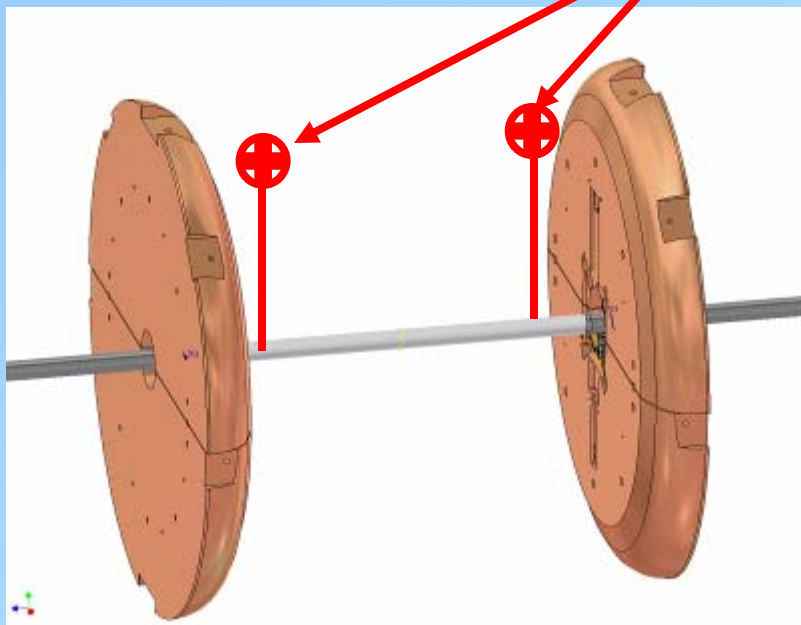


TECHNICAL SUPPORT 2010

VTX Support Structure Base  
Assembly Design In Progress  
Fixtures being re-designed at  
PHENIX

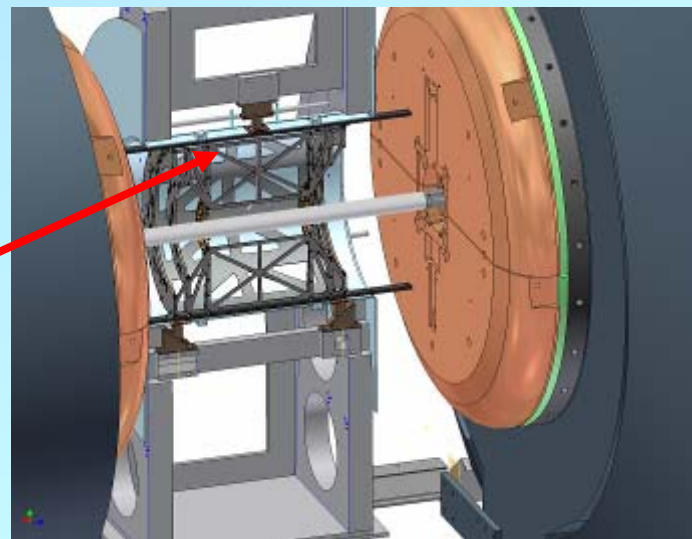
TECHNICAL SUPPORT NO-0



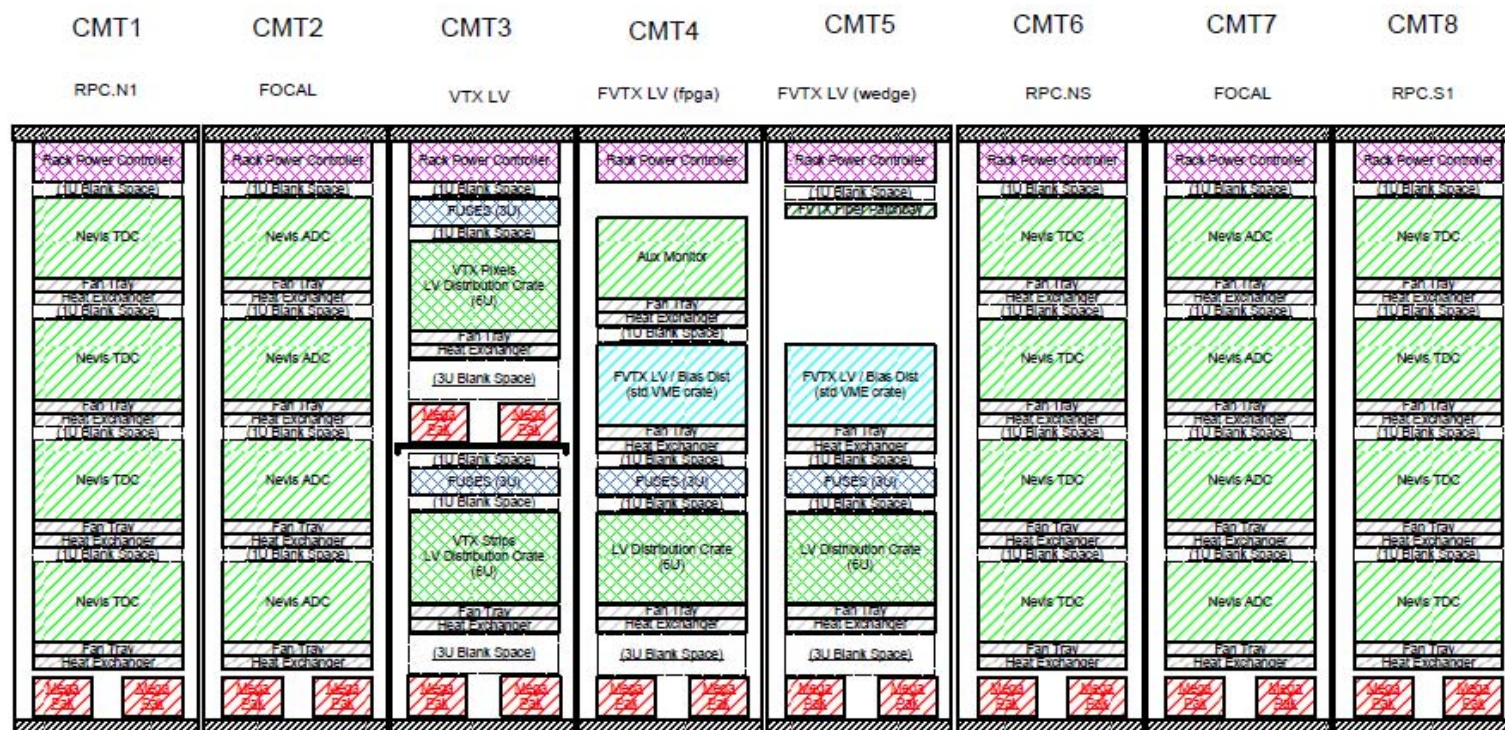


Survey Targets and fixtures TBD  
Must be able to align BP to req'd  
radial and angular accuracy  
without VTX and with VTX in  
clamshells open configuration.

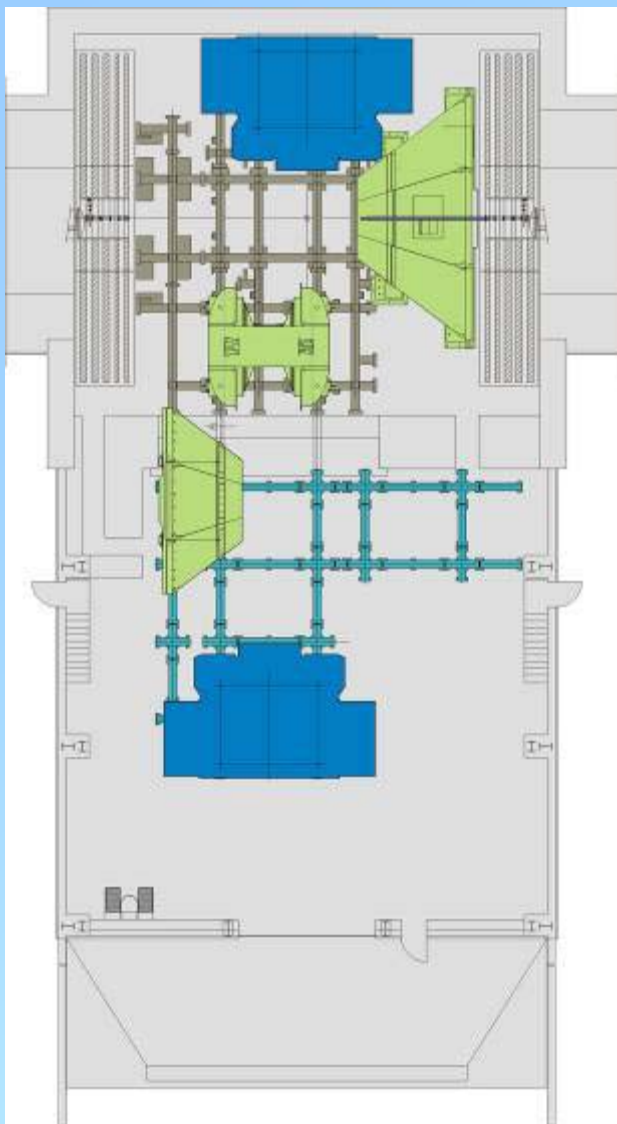
$\frac{1}{2}$  of VTX  
detector support  
structure



## PHENIX Bridge Racks



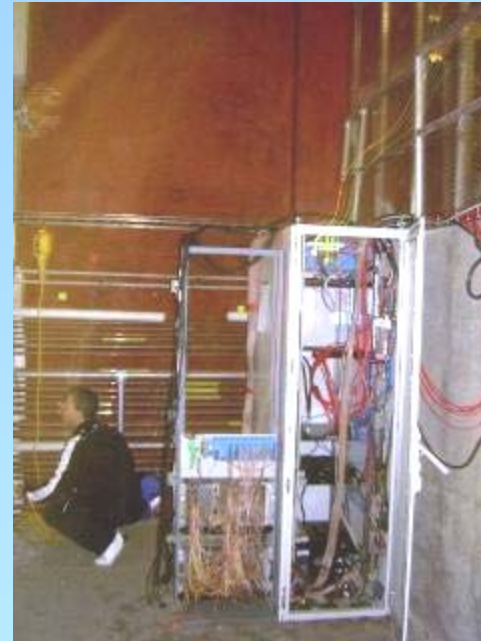
S. Boose  
3/26/2010



Major PHENIX Components during shutdown when Old beampipe is out and new beampipe is ready to go in. Approximately last week in July.

This is the optimal point for DC, MuTr Station 1, and/or RPC absorber work. Potential work in these areas is still under review by PM.

Note: Absorber installation to be done during this period. MuTr station 1 work shall be limited to work in situ (i.e. station 1 will not be removed). Similarly DC/PC1 work will be limited to work which can be accomplished with the DC in situ, although, if requested, it may be possible to translate the DC on its mounting rails to allow limited access to DC/PC1 electronics.



## New Beampipe Pre-Shutdown Prep

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Design central beam pipe and new transition sections	Done	
Order beampipe	Done	Brush Wellman
Order new design transitions	Done	CAD
Order replacements for existing transitions and spools	Done	CS
Conceptual and mechanical design beampipe supports	Done	Done
Beampipe fabrication	Done	Done
Receive bp and all beampipe sections	Done	CAD
Beampipe Installation Review (Preliminary)	Done	Done
Bp and sections acceptance tests and inspection	In Progress	
Send beampipe to CERN for NEG Coating	4/15/2010?	
Fabricate beampipe supports	5/31/2010	In Progress
Receive bp back at BNL	5/31/2010?	May be delayed
Memorial Day: Lab Holiday	5/31/2010	Enjoy the weekend
Choreograph removal of old beampipe and installation of new (final)	6/1/2010	
Final acceptance and inspection bp and sections	6/15/2010	
Test and inspect beampipe supports	6/15/2010	
Beampipe Installation Review (Final)	6/15/2010	

4/15/2010

# VTX Subassembly, Top Assembly, Installation and Integration Prep

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Conceptual and mechanical design of installation, structural support and detector alignment	4/2/2010	In Progress →
Installation Review (ESRC)	~4/15/2010	After analyses done →
Beampipe & VTX Installation Work Permits	5/31/2010	→
Memorial Day: Lab Holiday	5/31/2010	Enjoy the weekend
Subassemblies complete ready for integration into hemispheres	6/30/2010	
Receive, inspect, test, rework and qualify assembly tools and fixtures, electronics racks and support	6/30/2010	VTX Group
Fabricate/procure detail components for installation, support and alignment, including station 1 work platforms	6/30/2010	→
Design & fabricate fixtures, techniques and mockups for installation and alignment	6/30/2010	
4 <sup>th</sup> of July Holiday	7/5-7/6/2010	Enjoy the long weekend
Receive & inspect components (installation, support & alignment)	7/15/2010	→
Assemble Hemispheres	7/15/2010	
Mock installations/alignments, bench tests	7/31/2010	↓

4/15/2010

## RPC3 Pre Shutdown Prep

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Order raw materials for PHENIX fabricated parts	4/15/2010	In Progress
Order purchased parts for RPC3 South	4/15/2010	In Progress
Prepare Installation Plan	4/30/2010	In Progress
Fabricate PHENIX parts	5/14/2010	In Progress →
Receive and inspect CS fabricated parts	5/28/2010	In Progress →
Memorial Day: Lab Holiday	5/31/2010	Enjoy the weekend →
Prepare work permit for installation	6/1/2010	
Receive purchased parts	6/4/2010	→
Assemble, test and burn-in 1/2 octants	6/18/2010	→
Pre-Assemble base components at PHENIX	6/18/2010	→

## Start of Shutdown

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
DAQ Tests	6/4/2010	
Purge Gas From Detectors	6/8/2010	
Remove BP Collar	6/22/2010	As early as possible after 6/1
Move MMS south	6/22/2010	As early as possible after 6/1
Prep EC for move to EC	6/22/2010	As early as possible after 6/1
End of Run 10	6/23/2010	
EOR Party	~6/25/2010	
Close North and South BP gate valves and lock closed for until new BP is installed	6/24/2010	
Open and disassemble wall	6/24/2010	
Remove EC ladder and fold platforms	6/30/2010	→
Move EC to AH	6/28/2010	→
Install cart	6/28/2010	→
Move Collars to AH	6/30/2010	→
Install decking	6/30/2010	→
Install Manlift	6/30/2010	→
Remove RPC2 Prototype, support brackets, cabling & Piping	6/29/2010	→
Remove MMS east vertical lampshade	6/30/2010	→ If Necessary (permit needed)

## Beampipe De-installation

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
4th of July Holiday & Floating Holiday	7/5&7/6/2010	Enjoy
Remove HBD's and HBD cables Remove RXNP's and cables	7/9/2010	Concurrent with Start of shutdown tasks
Remove MPC's	7/16/2010	Concurrent w MPC's
Remove BBC's	7/16/2010	Concurrent with BBC's
Position MMS for Vacuum break	7/19/2010	
Install Temporary supports for old BP	7/19/2010	Supports TBD
Break vacuum on north side of MMS	7/19/2010	
Remove south bellows	7/19/2010	
Move MMS north, remove spool and south3-5 transition	7/20/2010	
Move the MMS south & Prep MMS for move to AH	7/23/2010	Begin MMS prep with shutdown start
Move CM south, remove north bellows	7/23/2010	
Move old Be bp south into MMS and move CM north	7/23/2010	
Move MMS to shutdown park position	7/23/2010	
Remove old Be BP	7/23/2010	
Move CM south and east	7/23/2010	
Remove north 3 to 5 transition	7/23/2010	

4/15/2010

# New Beampipe installation

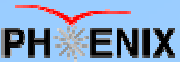
PHENIX

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Prepare north 3 to 5 transition for installation with roller guides, bakeout wrap and thermocouples	7/23/2010	CAD
Prep CM North and South for Absorber and install	8/13/2010	(Install if absorber rec'd)
Install north 3 to 5 transition in MMN	8/13/2010	
Install new Be pipe in CM on temp supports	8/17/2010	
Move CM back to beamline & connect new Be BP to 1-5/8 transition and bellows and north 3-5 transition	8/17/2010	
Move CM to run position	8/18/2010	
Prealign Be/Alum pipe with transitions attached on new BP supports At MPC north, BBC south and north nosecone	8/19/2010	
Prepare south 3 to 5 transition for installation with roller guides, bakeout wrap and thermocouples	8/19/2010	
Install south 3 to 5 transition, bellows and 1-5/8 to 3" transition in MMS	8/20/2010	
Move MMS back into IR on beamline	8/20/2010	
Move CM south, slide Transition assembly in MMS north and connect to new Be BP	8/20/2010	
Move CM and MMS north and install south spool. Leak check. Move MMS South	8/27/2010	
Install temporary bakeout supports	8/27/2010	
Install bakeout blankets and monitoring	8/27/2010	
Labor Day Lab Holiday	9/6/2010	Enjoy
Bakeout New BP and activate NEG coating	9/10/2010	How Long?
Leak check BP	9/10/2010	
Re-install MPC's including Cables and services Re-install BBC's including Cables and services	9/24/2010	Concurrent efforts
Move CM to run position	9/24/2010	
Final alignment of new BP	10/1/2010	

4/15/2010

# VTX Installation, VTX Services and Electronics



TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Install and align VTX rail attachment hardware to CM	10/1/2010	Install during bakeout? →
Install and align VTX rails parallel to beam line	10/8/2010	→
Install and align VTX rails perpendicular to beam line	10/8/2010	→
Install and align west half detector module	10/15/2010	→
Install and align east half detector module	10/22/2010	→
Thanksgiving and Black Friday Holiday	11/25 & 11/26/2010	Enjoy →
Install mechanical support structures for VTX services and electronics	10/29/2010	Concurrent Effort →
Install Cable trays	10/29/2010	→
Install racks	10/29/2010	→
Install chiller	10/29/2010	→
Install cables, plumbing	10/29/2010	→
Connect cables and plumbing	10/29/2010	V →
Test and commission	12/1/2010	↓

4/15/2010

# RPC3 South Prep, Early Shutdown

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Remove wiring, walkovers, FCAL and scintillator hardware that would otherwise interfere with installation	7/2/2010	PHENIX →
4th of July Holiday	7/5 & 7/6/2010	Enjoy →
Remove/relocate shielding	7/9/2010	Riggers →
Remove crystal palace & vapor barrier	7/16/2010	CAD →
Inspect Gap 5 south for legacy items/problems	7/23/2010	→
Address legacy items/problems as convenient prior to shutdown start	7/30/2010	→
Install lighting & relocate sensors as necessary	8/6/2010	Electrician →
Temporarily relocate, re-position or otherwise address interfering piping, cable trays	8/20/2010	PHENIX (w/ CAD Help?), Electrician →
Remove RPC prototype	8/20/2010	→
Pre-survey $\frac{1}{2}$ octant reference points	8/27/2010	Surveyors →
Drill and tap $\frac{1}{2}$ octant and rotating piston mounting points	8/31/2010	→
Build/install access and work platforms for walk on top of MuID steel including stairs from MMS eyebrow	8/31/2010	Carpenters →
Final cleaning and prep of gap 5 for grouting	9/3/2010	→
Labor Day Lab Holiday	9/6/2010	Enjoy →
Pre-installation orientation meeting with masons and riggers	9/7/2010	→
Position lifting equipment in tunnel	9/10/2010	Riggers →
Move east and west base structures into south tunnel and assemble on east and west sides of pedestal respectively. Include translation control fixtures	9/10/2010	Riggers & PHENIX techs →

# RPC3 South Installation

TECHNICAL SUPPORT 2010

Task	Due By	NOTES
Install and align base structures on east and west sides of gap 5	9/14/2010	
Prepare for grouting	9/15/2010	
Install grout	9/16/2010	
Install pitch control rails on pedestal and gap 5 east & west inner walls	9/17/2010	
Install upper suspension support hardware	9/17/2010	
Install $\frac{1}{2}$ octants, 2 at a time in accordance with work plan/work permit		
<i>Transport <math>\frac{1}{2}</math> octants 2 at a time from RPC factory to south tunnel on angled transport carts</i>		
<i>Transfer <math>\frac{1}{2}</math> octants from angled transport carts one at a time to temporary free standing and re-orienting roller fixture (fore and aft wheels and axel)</i>		
<i>Lift (and re-orient if appropriate) <math>\frac{1}{2}</math> octant and install into base structure, previously installed <math>\frac{1}{2}</math> octant or upper suspension hardware as appropriate per work plan</i>		
<i>Pre-align each <math>\frac{1}{2}</math> octant as installed</i>		
<i>Perform electrical integrity tests before proceeding to next pair of <math>\frac{1}{2}</math> octants</i>		
<i>After all <math>\frac{1}{2}</math> octants are in place and tested, join east and west halves of full south station 3 detector and align to survey markers</i>		
	10/15/2010	Riggers & PHENIX Techs

4/15/2010

## RPC3 South Integration

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Final survey	10/22/2010	Surveyors
Install new cable trays and piping supports	10/29/2010	Electrician, earlier if possible
Re-install MuID wiring and pipes	11/5/2010	
Re-install MuID gas rack	11/30/2010	
Install south thermal/vapor barrier	11/19/2010	CAD
Thanksgiving and Black Friday Holiday	11/25 & 11/26/2010	Enjoy
Re-install shielding	11/30/2010	Riggers
Commissioning and final acceptance tests	11/30/2010	RPC Group
Install RPC3 HV, LV and signal wiring and gas lines	11/30/2010	
Install RPC3 South gas distribution rack	11/30/2010	
Install RPC3 South environmental controls (heaters and thermostats)	11/30/2010	Electrician

## Shutdown 2010 Other Work

TECHNICAL SUPPORT 2010

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
RPC3 North unfinished business	7/15/2010	Electronics and cabling, grounding issues, environmental controls
MuTrigger FEE unfinished business	7/15/2010	MMS cable trays, →
RHIC Summer Sunday Tour	8/15/2010	During bakeout →
Other subsystem maintenance and repair	11/1/2010	TBD →
Gas System maintenance, repair, upgrade	11/1/2010	→
Bridge Electrical support upgrade	11/1/2010	Support for 4 full racks in 2010, 4 more (8 total) in future →
PHENIX Infrastructure maintenance, repair, upgrade	11/1/2010	TBD →
DC/PC maintenance/repair	11/15/2010	FEM and wire troubleshooting and repairs, major efforts will require longer shutdon
Thanksgiving and Black Friday Holiday	11/25 & 11/26/2010	Enjoy
Rack Room upgrade	11/30/2010	TBD →
Future upgrade support	11/30/2010	RPC1, RPC absorbers, FVTX, FOcal, other TBD →
Prepare for Run 11	11/30/2010	Normal end of shutdown tasks, typically taking 3-4 weeks
Run 11 Start	12/1/2010	
End of Shutdown Party	~12/3/2010	↓

4/15/2010

# 2009 Building Maintenance Issues

TECHNICAL SUPPORT NO-0

- Roof leaks in utility bathroom at northwest corner behind tech offices, over door between rack room and assembly hall and over door between control room and elect. ass'y room.
- General maintenance for Trailer Offices (in progress)
- Trailer Office Modifications planning in progress (new exterior siding?)
- New roof leaks in laser room and IR (southeast corner)
- Flooding in AH/ Driveway heaving [Lake PHENIX]



4/15/2010

## PHENIX Procedure Review Current Status:

## 147 Procedures Identified

- 84 Made Inactive (not currently in use, will require revision to re- activate if and when necessary, available for reference purposes)
- 10 CAD procedures relevant to PHENIX, all are current and up-to- date.  
(CAD web access to these documents is not up to date)
- 42 PHENIX approved procedures.
  - 1 is currently under review
  - 41 are current and up-to-date
- 11 Proposed/Draft Procedures (never previously formalized)

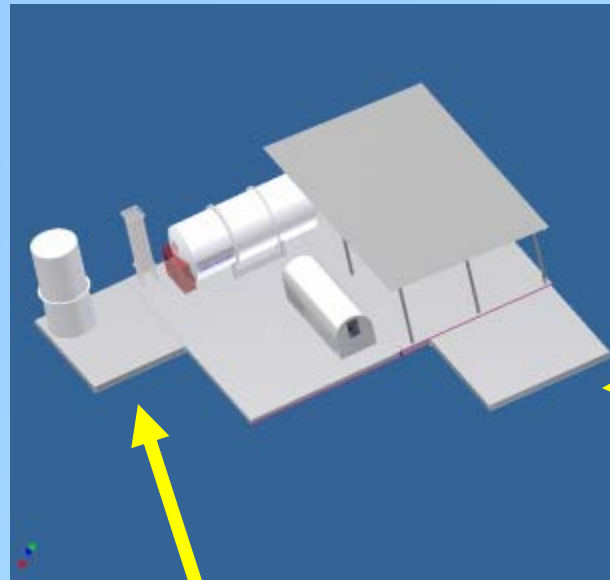
Web retrieval of latest procedures now available from PHENIX Internal:

[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_procedures.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_procedures.htm)

*Nothing new to report this week.*

## New Argon Dewar and Empty Gas Bottle Storage Area

PHENIX



Pad for  
Empty Gas  
Bottles



Pad for argon  
Dewar

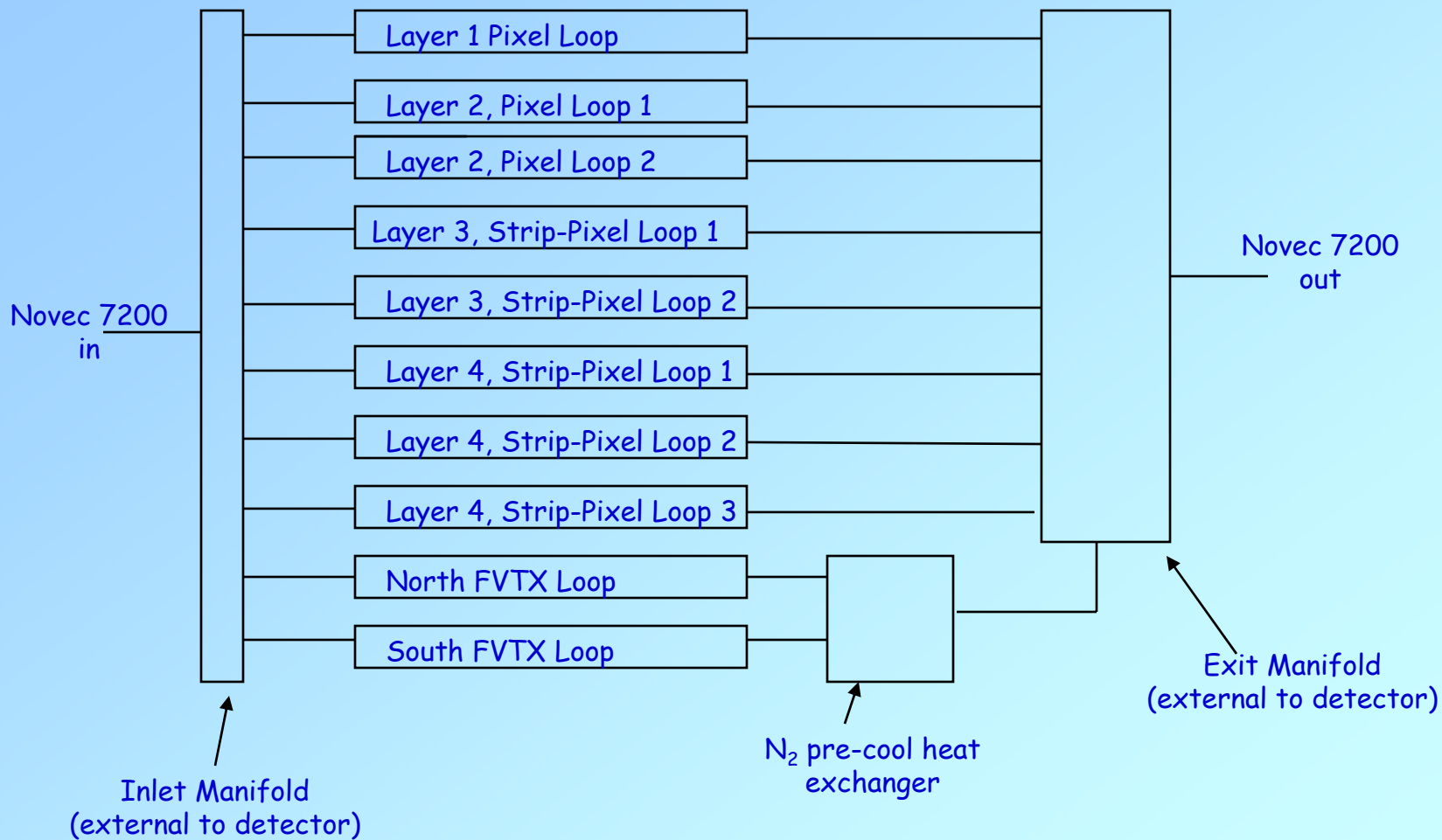


PO for material to fill cracks is in progress. PO for Ar Dewar installation and rental is in progress

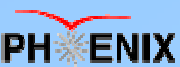
4/15/2010

TECHNICAL SUPPORT 2010

# VTX/FVTX Flow Schematic, $\frac{1}{2}$ detector



# VTX/FVTX Thermal Calculation Summary



TECHNICAL SUPPORT 2010

Layer	Coolant	Number of loops/layer	# Circuits in parallel per loop	# of passes in series per loop	Fluid Inlet Temperature		Inlet Pressure		Flow rate in circuit		Total flow rate in loop	
					°F	°C	psig	kPa	gpm	ml/sec	gpm	ml/sec
1	Novec 7200	1	3*	2	17.5	-8.	20	137.895	0.137	8.64	0.274	17.29
2	Novec 7200	2	3*	2	17.5	-8.	20	137.895	0.137	8.64	0.274	17.29
3	Novec 7200	2	2	2	17.5	-8.	20	137.895	0.219	13.82	0.438	27.63
4	Novec 7200	3	2	2	17.5	-8.	20	137.895	0.212	13.38	0.424	26.75
FVTX	Novec 7200	2	1	4	17.5	-8.	20	137.895	0.3	18.93	0.3	18.93

Layer	Total Loop Heat Load		Fluid Outlet Temperature		Loop Pressure drop		Maximum Sensor Temperature		Notes
	BTU/hr	Watts	°F	°C	psid	kPa	°F	°C	
1	450	132	25.1	-3.9	10.0	68.9	67.1	19.5	2 circuits in 1st pass, 3 circuits in 2nd pass
2	450	132	25.1	-3.9	10.0	68.9	66.7	19.3	
3	340	100	21.1	-6.1	10.0	68.9	31.5	-0.3	
4	392	115	21.8	-5.7	10.0	68.9	32.2	0.1	
FVTX	500	146	25.2	-3.8	10*	68.9	65.8	18.8	* includes Disk 1 through 4 in series and N2 pre-cool heat exchanger

4/15/2010

## BigWheel Thermal Calculations

TECHNICAL SUPPORT 2010

## Calculated Flow Temperature Rise

Plate	Flow Rate Gpm	Fluid Temp °C	Fluid/Wall OD °C	Plate °C	Plate/Card °C
1	.375	1.7	2.3	7.2	???
2A	.375	1.7	2.2	7.0	???
2B	.375	1.7	2.2	7.0	???
3	.375	1.2	1.8	5.5	???
4	.375	2.1	2.8	8.5	???
FVTX	.375	2.8	2.9	9.0	???

All flow paths have a calculated pressure drop of ~ 20 psid

Total flow for all Big Wheel circuits = 7.5 gpm

If assumed center of card heat load is further inboard plate temp rise will increase

No credit taken for heat transfer to ambient.

## Inlet and Return Piping Calculations & Requirements

After determining internal flow requirements, the inlet and exit piping requirements were analyzed with the following results:

Flow: ~7.5 gpm

Piping length: 100 feet each, inlet and outlet

Inlet and outlet ambient heat gain: 1.4 kW (total for inlet and outlet assumes moderately insulated piping)

Pipe size: 1 inch ID

Piping pressure drop: 8.45 psid inlet and same for outlet (maximum allowed 10 psid both sides)

### VTX/FVTX Chiller Requirements (not including "Big Wheels")

Coolant: Novec 7200

Flow rate: 7.5 gpm

Coolant Supply Temp.: - 9°C

Coolant Supply Pressure: 30 psig

Capacity: ~4 kW

### VTX/FVTX Chiller Requirements ("Big Wheels")

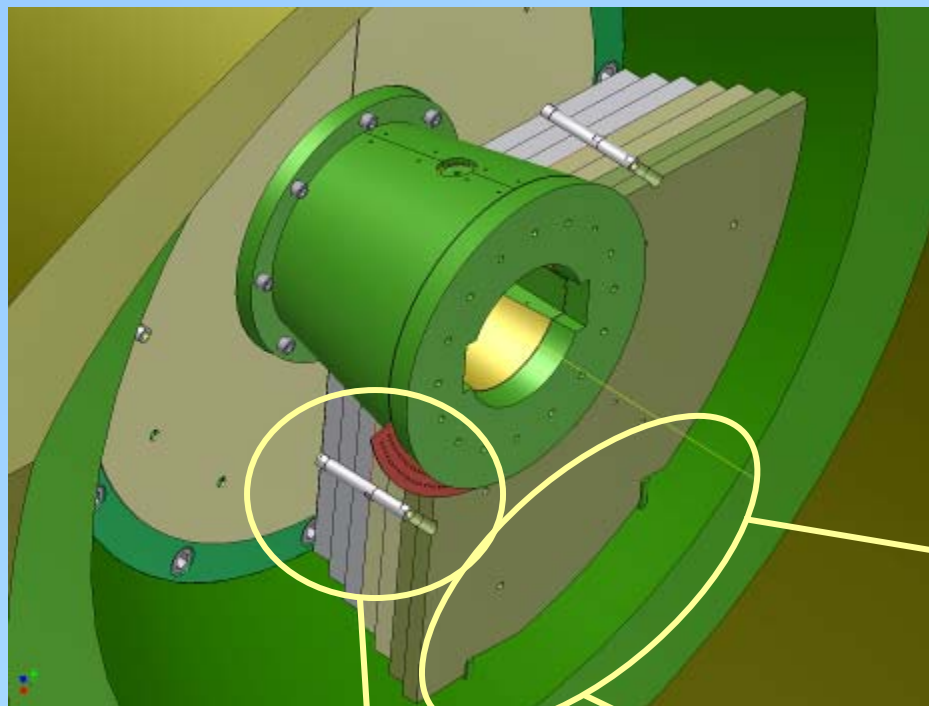
Coolant: Ethylene Glycol/Water 60/40

Flow rate: 8 gpm

Coolant Supply Temp.: 10 °C

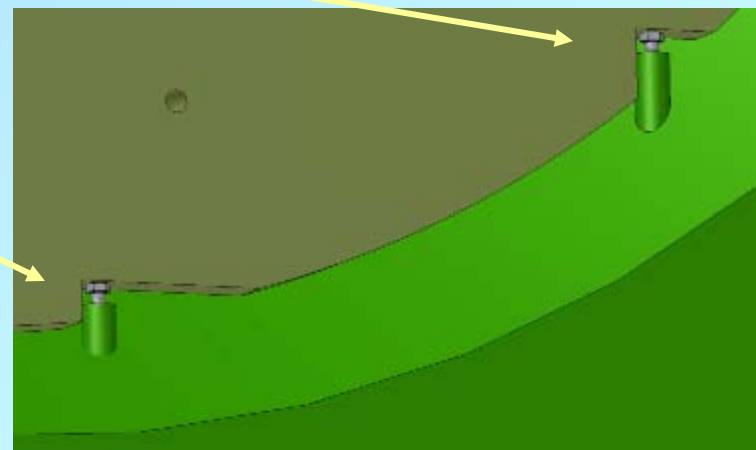
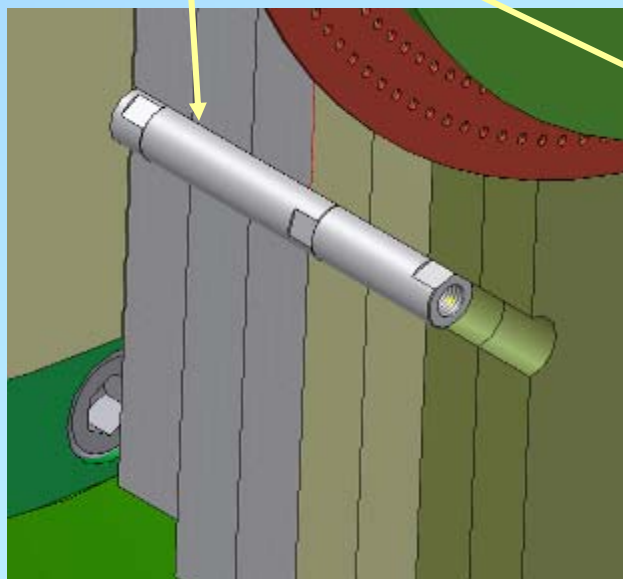
Coolant Supply Pressure: 50 psig

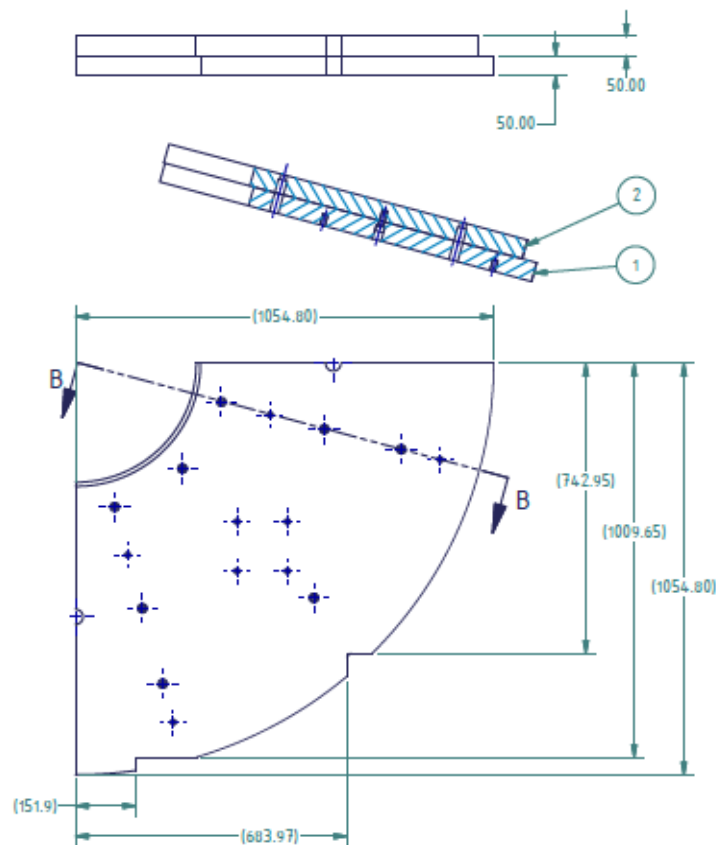
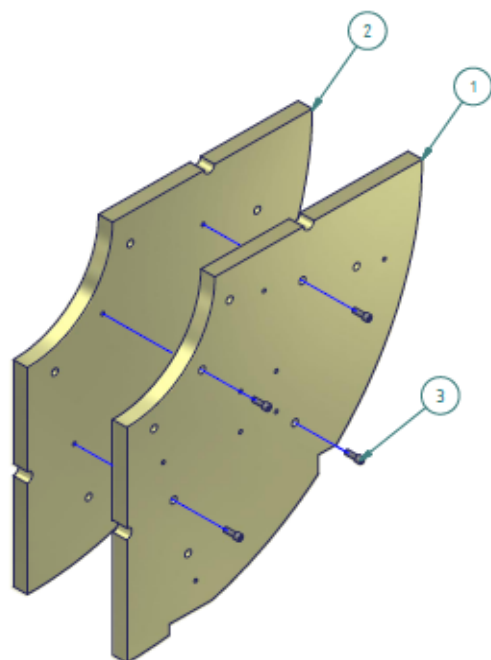
Capacity: ~4.0 kW



## RPC Absorber Final Design

- Welded & tapped vertical support bossess
- 3 stage positioning rod



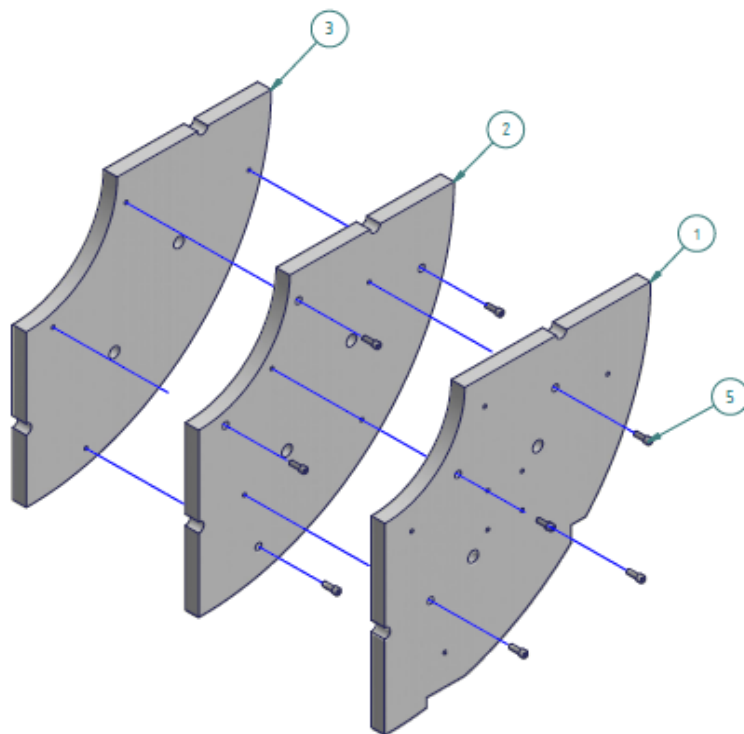


TYPICAL SECTION 2 QUADRANT ASSEMBLY  
(SOUTH EAST SECTION SHOWN)  
SEE DRAWING #105-0224-085 (SOUTH)  
& DRAWING #105-0224-095 (NORTH)  
FOR COMPLETE ASSEMBLY

1	5	105-0224-099 Pk. No. 2	Layer 5 Absorber Plate South
1	4	105-0224-070 Pk. No. 2	Layer 4 Absorber Plate South
4	3	ANSI B16.3.1M - M14x2 x 40	Forged Socket Head Cap Screw - Metric
0	IT	PART NUMBER	DESCRIPTION
BILL OF MATERIALS			
THIRD ANGLE PROJECTION			
NEXT ASSEMBLY			
BROOKHAVEN NATIONAL LABORATORY			
Upton, NY 11973			
PHENIX			
RPC			
Section 2 Absorber Assembly South East			
C			
105-0224-082 A			
REVISION STATUS OF SHEETS			
REV	DATE	BY	APP
1	11/14/00	11/14/00	11/14/00
2	11/14/00	11/14/00	11/14/00
3	11/14/00	11/14/00	11/14/00
4	11/14/00	11/14/00	11/14/00
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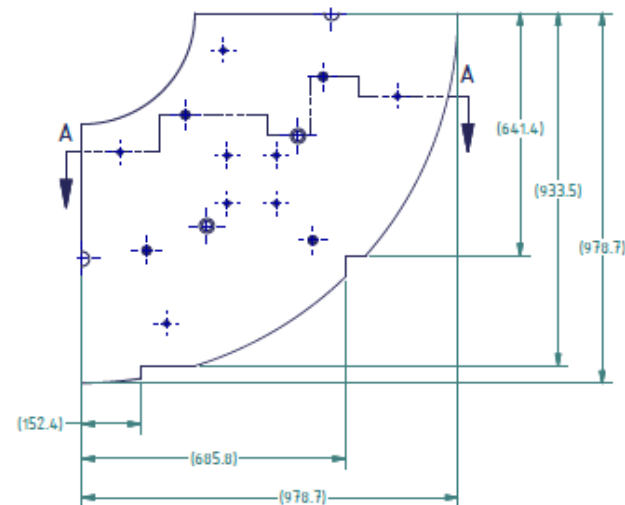
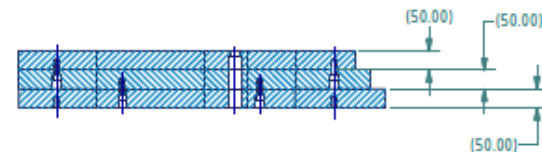
## NOTES:

1. MATERIAL: SST TYPE 310.





TYPICAL SECTION 1 QUADRANT ASSEMBLY  
(SOUTH EAST SECTION SHOWN)  
SEE DRAWING #105-0224-085 (SOUTH)  
& DRAWING #105-0224-095 (NORTH)  
FOR COMPLETE ASSEMBLY

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	04/05/2010	



0	5	AND 818.311 - M14x2 x 40	Forged Socket Head Cap Screw - Metric
1	3	105-0224-075	Layer 1 Absorber Plate North & South
1	2	105-0224-076	Layer 2 Absorber Plate North & South
1	1	105-0224-077 Pl. No. 1	Layer 3 Absorber Plate South East
Q	IT	PART NUMBER	DESCRIPTION

## BILL OF MATERIALS

				BROOKHAVEN NATIONAL LABORATORY Upton, NY 11973																			
THIRD ANGLE PROJECTION				NEXT ASSEMBLY				PROJECT:		PHENIX RPC													
INVESTED IN DESIGN, AUTOMATIC AND CAD, TOL-ABLE, MATERIALS, CONSTRUCTION, SERVICE, AL. SHIPBOARD AND IN-PLANT CAPITAL, TRAINING, EQUIP. & ETC. EQUIP. & ETC. EQUIP. & ETC. EQUIP. & ETC.				DESIGN		MANUFACTURE		01/01/00		01/01/00		Section 1 Absorber Assembly											
				DESIGN		MANUFACTURE		01/01/00		01/01/00													
				DESIGN		MANUFACTURE		01/01/00		01/01/00													
				DESIGN		MANUFACTURE		01/01/00		01/01/00													
				DESIGN		MANUFACTURE		01/01/00		01/01/00													
PROJECT		MANUFACTURE		DESIGN		MANUFACTURE		01/01/00		01/01/00		01/01/00		01/01/00		01/01/00		01/01/00		01/01/00		01/01/00	

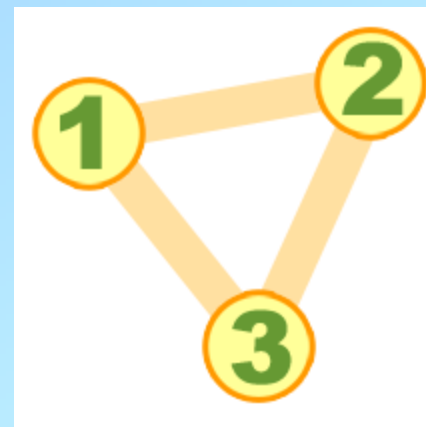


# Safety, Security, etc.

## The Three Point Rule

The three point rule is well known for working on ladders, but it applies to other situations as well. Many BNL accidents involving slips and falls related to BNL vehicles, especially tall ones, have produced injuries that are 25% more severe than other types of injuries.

To help eliminate these accidents, remember to follow the Three-Point Rule: always maintain complete contact with both hands and one foot or both feet and one hand when entering, exiting or climbing on a vehicle. The Three-Point system allows you to have maximum stability and support, reducing the likelihood of slipping and falling.



## What Can You Do?

- Do wear safe shoes with good support.
- Do exit and enter facing the vehicle.
- Do look for obstacles and hazardous conditions on the ground, such as black ice.
- Do maintain a firm grip on handles or rails.
- Do avoid holding/carrying objects and materials.
- Don't climb down with something in your free hand. Put it on the vehicle floor and reach in for it when you are on the ground.
- Don't rush to exit the vehicle.
- Don't jump out - you may land off balance or on an uneven surface and fall.
- Don't use tires on wheel hubs as a step surface.
- Don't use the door frame or door edge as a handhold.

## Upcoming ISO 18001 & 14001 Registration Audit.

This year, the audit starts the week of May 3.

This is earlier than usual. It is possible that personnel associated with C-AD experimental areas will be interviewed by the Registration Team as part of the audit.

All persons working in the experimental areas of RHIC are invited and encouraged to attend one of the 45 minute OSH/EMS Forums which are given as refreshers for the upcoming audit.

Any of you may attend any forum date below.

It is important to C-AD and BNL that we do well on the audit.

Forum Dates:

April 20 (Tuesday)

April 22 (Thursday)

April 27 (Tuesday)

April 29 (Thursday)

All sessions are 11:15 - 12:00 noon, Bldg 911 Snyder Seminar Hall.

\* OSH: Occupational Safety & Health Management System

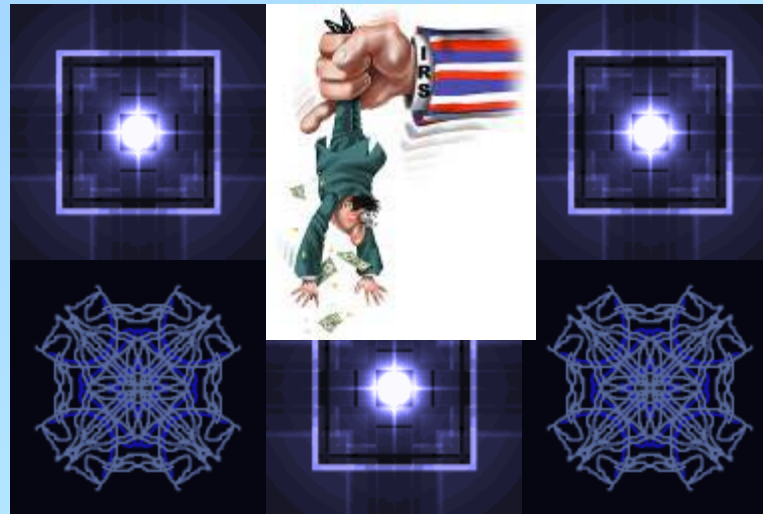
EMS: Environmental Management System

Another interesting title for a Lessons Learned report:

"Inadequate Documentation of Process Results in Less Than Adequate Implementation"

# Where To Find PHENIX Engineering Info

*45 Working days until the start of  
the 2010 shutdown!*



Links for the weekly planning meeting slides, archives of past meeting slides, long term planning, pictures, videos and other technical info can be found on the PHENIX Engineering web site:

[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_SSint-page.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm)

